

DRUG NAME: Octreotide**SYNONYM(S):** Octreotide acetate, SMS 201-995, synthetic octapeptide analogue of somatostatin, SMS-LAR**COMMON TRADE NAME(S):** SANDOSTATIN®, SANDOSTATIN LAR® (notice of compliance,¹ June 1989; patent expires² April 2011)**CLASSIFICATION:** Endocrine hormone*Special pediatric considerations are noted when applicable, otherwise adult provisions apply.***MECHANISM OF ACTION:**

Octreotide is a synthetic somatostatin analogue with similar but more prolonged pharmacological effects.³ The long-acting release (LAR) formulation is a depot IM injection of suspended microspheres.⁴ Several mechanisms of actions have been suggested, including the inhibition of exocrine secretion in the digestive system (eg, gastrin, serotonin), inhibition of endocrine secretion of hormones (eg, growth hormone, insulin, glucagon), modulation of biliary and GI motility, acting as a neurotransmitter, and induction of apoptosis. Five somatostatin receptor subtypes have been identified⁴ in gastro-entero-pancreatic (GEP) endocrine tumours. Octreotide is used to control hormone-mediated symptoms in GEP endocrine tumours such as insulinoma, gastrinoma, VIPoma, glucagonoma, somatostatinoma, GRFoma/acromegaly, and carcinoid tumours.³ Octreotide is cell cycle phase-specific (G₁-phase).³

PHARMACOKINETICS:Octreotide LAR pharmacokinetics is similar once the drug is released from microspheres.⁴

Interpatient variability	no information found	
Absorption	SC: rapidly and completely absorbed; LAR injection: steady state after 2-3 injections at 4-weekly intervals, ⁴ which is chosen to cover escape between days 21 and 42 ³	
	time to peak plasma concentration	SC: 30 min; LAR injection: level peaks at 1 hour, then becomes subtherapeutic for 7 days before increasing to plateau at day 14 for 3-4 weeks
Distribution	mainly in liver, kidneys, skin and lungs; ⁴ crosses human placenta to fetus. ⁵	
	cross blood brain barrier?	no information found
	volume of distribution	0.4 L/kg
	plasma protein binding	65%
Metabolism	30-40% metabolized in the liver ⁶	
	active metabolite(s)	none
	inactive metabolite(s)	peptide fragments ⁷
Excretion	renal ⁸	
	urine	11-32% as unchanged drug ⁹
	feces	mainly unchanged drug
	terminal half life	SC: 100 min; IV: 90 min
	clearance	160 mL/min ⁴ ; acromegaly 300 mL/min; chronic renal failure 75 mL/min ⁹

Adapted from reference⁴ unless specified otherwise.

USES:**Primary uses:**

- * Acromegaly¹⁰⁻¹³
- * Carcinoid syndrome^{16,17,17,18,18}
- * VIPomas¹⁹
- Gastro-entero pancreatic (GEP) endocrine tumours³

Other uses:

- Chemotherapy-induced diarrhea^{14,15}
- Malignant intestinal obstruction⁶
- Pancreatic cancer²⁰
- Thymoma^{21,22}

*Health Canada Therapeutic Products Programme approved indication

No pediatric malignant indications.

SPECIAL PRECAUTIONS:**Caution:**

- **Bradycardia, arrhythmias, and conduction abnormalities** (including QT prolongation) have been observed in acromegalic and carcinoid syndrome patients taking octreotide. Monitor patients with heart failure or taking medications known to alter heart rate or rhythm. Dose adjustments may be necessary for drugs used for correction of fluid and electrolyte balance, and drugs such as beta-blockers and calcium channel blockers.^{23,24} Octreotide may enhance the toxic effects of other drugs which prolong the QT/QT_c interval.²⁴

Carcinogenicity: Not carcinogenic in animal studies.⁴

Mutagenicity: Not mutagenic in Ames test or in animal studies.⁴

Fertility: SC octreotide does not impair fertility in animals.⁴

Pregnancy: FDA Pregnancy Category B. Animal-reproduction studies have not shown a fetal risk but there are no controlled studies in pregnant women, or animal-reproduction studies have shown a fetal risk (other than decreased fertility) not confirmed in controlled studies in pregnant women in the first trimester and there is no evidence of risk in later trimesters.⁵

Breastfeeding: Although octreotide is likely digested when taken orally,⁵ breastfeeding should be avoided unless the potential benefit justifies the potential risk to the infant.⁴

SIDE EFFECTS:

The table includes adverse events that presented during drug treatment but may not necessarily have a causal relationship with the drug. Because clinical trials are conducted under very specific conditions, the adverse event rates observed may not reflect the rates observed in clinical practice. Adverse events are generally included if they were reported in more than 1% of patients in the product monograph or pivotal trials, and/or determined to be clinically important.

ORGAN SITE	SIDE EFFECT
Clinically important side effects are in bold, italics	
allergy/immunology	anaphylactic and hypersensitivity reactions (rare)
auditory/hearing	otitis and tinnitus (0-2%)
cardiovascular (arrhythmia)	arrhythmia ²³ (3-9%) ²⁴
	conduction abnormalities ²³ (9-10%) ²⁴
	sinus bradycardia ²³ (19-25%) ²⁴
cardiovascular (general)	edema (1-3%)
	hypertension ^{23,24} (≤13%)
constitutional symptoms	fatigue (1 ⁺ -10 ⁺ %, severe 0.5% ⁺)

ORGAN SITE	SIDE EFFECT
Clinically important side effects are in <i>bold, italics</i>	
	fever (0-2%)
	weight gain (0-2%)
dermatology/skin	<i>extravasation hazard: none</i>
	acne (0-4%)
	alopecia (1-4%)
	bruise (0.5-4%)
	flushing (0.5-2%)
	injection site: hematoma (0-10 [†] %), pain (8-10%)
	pruritus (0-4%)
endocrine	diabetes mellitus (rare)
	hot flashes (0-2%)
	hypoadrenalism (0-3%)
	hypogonadism (0-2%)
	hypothyroidism (0-2%)
gastrointestinal	<i>emetogenic potential: nonemetogenic</i>
	abdominal: discomfort (4 ⁺ -44 [†] %), distention (0 ⁺ -8 [†] %)
	anorexia (0-2%)
	belching (0-2%)
	biliary tract abnormalities (including gallstones) (52 [†] -62 ⁺ %)
	cholecystitis (0-2%)
	constipation (1 ⁺ -9 [†] %)
	diarrhea (7 ⁺ -58 [†] %)
	dry mouth (0.5-2%)
	flatulence (0.5 ⁻ -13 [†] %)
	gallstones (24-22%)
	hemorrhoids (0-2%)
	nausea (9 ⁺ -30 [†] %)
	pancreatitis, acute (rare)
	pancreatitis, chronic (rare)
	rectal gas (0-4%)
	stools: abnormal (0.5 ⁻ -6 [†] %), loose (3 ⁻ -36 [†] %)
stools, fatty (4-0%)	
vomiting (3-4%)	
hemorrhage	epistaxis (0-2%)
hepatic	acute hepatitis (rare)
	hyperbilirubinemia (rare)
infection	urinary tract infection (0-6%)
	vagina infection (0-3%)
metabolic/laboratory	hyperglycemia (15%) ⁹
	hyperkalemia (rare) ²⁵
	hypoglycemia (0-2%)
	decreased serum zinc levels (rare)

ORGAN SITE	SIDE EFFECT
Clinically important side effects are in bold, italics	
	decreased vitamin B ₁₂ levels (rare)
musculoskeletal	arm/leg: heavy or tired (0-3%)
	arthritis (0-3%)
	osteoarthritis (0-2%)
	twitching (0-2%)
	vertebral disk disorder (0-2%)
	weakness (1-0%)
neurology	dizziness (2 ⁻ -15 ⁺ %)
	irritability (0-2%)
	mood: anxiety (0.5-3%), depression (0.5-3%), moody (0-3%)
	numbness (0-2%)
	sleepiness/insomnia (0.5-2%)
ocular/visual	visual disturbances (0.5-3%)
pain	back pain (0.5-4%)
	cramps (0-3%)
	foot pain (0-2%)
	headache (2 ⁻ -18 ⁺ %)
	joint pain (0-4%)
	kidney pain (0-2%)
	leg: cramps (0-4%), pain (0-3%)
	throat pain (0.5-3%)
pulmonary	dyspnea (0-2%)
	nasal congestion (0-2%)
	sinusitis (0-4%)
renal/genitourinary	breast lump (0-2%)
	dysuria (0-2%)
	polyuria (0-2%)
	prostatitis (0-2%)
	urinary frequency (0-4%)
	vagina itch (0-2%)
secondary malignancy	breast tumour (0-2%)
syndromes	flu-like symptoms (0-6%)

Adapted from reference⁴ unless otherwise specified.

Biliary tract abnormalities such as gallstones, sludge without stones and biliary duct dilatation, may occur after more than 12 months of therapy. Only 1% of patients becomes symptomatic and requires intervention. Patients on long-term octreotide should be assessed with ultrasound of the gallbladder and bile ducts every 6-12 months.⁴ Gallstones usually respond to chenodeoxycholic acid or ursodeoxycholic acid. Interruption or discontinuation of octreotide may be considered based on the risk-benefit ratio of the patient.⁹

GI side effects may be reduced by giving SC injections between meals or at bedtime.⁴ GI side effects with octreotide LAR are mild to moderate, often disappear within 1-4 days of injection, and decrease with long term

treatment.⁹ Note that diarrhea in patients with carcinoid syndrome may be due to excessive hormone secretion or other causes and should be treated according to etiology.³

Injection site reactions after SC injection include pain, stinging, tingling or burning, and rarely, redness, swelling or rash. They usually last less than 15 minutes for SC injections or 60 minutes for LAR injections. Local discomfort may be reduced by allowing the solution to reach room temperature before injection and by injecting slowly.⁴

Hyperglycemia is usually transient and mild.^{9,26} Reduced glucose tolerance may be due to imbalance between insulin, glucagon and growth hormone. Post prandial blood sugar may be increased in nondiabetics and type II diabetics. Patients should be observed more closely when starting octreotide or changing doses.⁴

Malabsorption of dietary fats and vitamin B12 has been seen. There is no evidence that long-term treatment with SC octreotide has led to nutritional deficiency due to malabsorption. It is suggested that periodic quantitative 72-hour fecal fat and serum carotene determinations be performed to aid in the assessment of possible drug-induced aggravation of fat malabsorption. Depressed vitamin B12 levels and abnormal Schilling's tests have been observed, and monitoring of vitamin B12 levels is recommended during therapy with octreotide LAR.⁴

INTERACTIONS:

AGENT	EFFECT	MECHANISM	MANAGEMENT
bromocriptine	increased bromocriptine bioavailability	unknown	adjust bromocriptine dose as needed
cimetidine	delayed cimetidine absorption	altered GI absorption of cimetidine	adjust cimetidine dose as needed
cyclosporine	delayed absorption and decreased serum cyclosporine levels	altered GI absorption of cyclosporine	monitor serum cyclosporine levels; adjust cyclosporine dose as needed

Adapted from reference⁴ unless otherwise specified.

No significant interactions reported with chemotherapy, H2-antagonists, antimotility drugs, hypoglycemic drugs, fluid electrolyte or hyperalimentation solutions, antihypertensive diuretics and antidiarrheal drugs. Octreotide may reduce cytochrome P450 (CYP) 3A4 metabolism of drugs by suppression of growth hormone. Drugs metabolized mainly by CYP 3A4 and with low therapeutic index should be used with caution.⁴

SUPPLY AND STORAGE:

Injection: Novartis Pharmaceuticals Canada Inc. supplies octreotide as a buffered solution in 1 mL ampoules containing 50 mcg/mL, 100 mcg/mL or 500 mcg/mL for subcutaneous injection and a 5 mL multidose vial containing 200 mcg/mL; Novartis also supplies octreotide as a slow release formulation for intramuscular injection (octreotide LAR) in single dose vials containing 10 mg, 20 mg, or 30 mg requiring reconstitution. For prolonged storage, store in fridge and protect from light in original carton. Do not freeze. For day-to-day use, ampoules and multidose vials may be stored at room temperature for up to 2 weeks if protected from light. LAR vials can remain at room temperature on the day of injection; however the suspension should be prepared immediately before administration.²³ Do not use heat to bring solution rapidly to room temperature, as octreotide may be damaged.⁴

Novopharm Limited (Teva Canada) supplies octreotide as a buffered solution in 1 mL single use vials containing 50 mcg/mL, 100 mcg/mL or 500 mcg/mL and a 5 mL multidose vial containing 200 mcg/mL. For prolonged storage, store in fridge and protect from light. Do not freeze. For day-to-day use, both single dose and multidose vials may be stored at room temperature for up to 2 weeks if protected from light. Once punctured, multidose vials should be refrigerated and used within 28 days.²⁷

Omega Laboratories Ltd (distributed by Hospira) supplies octreotide as a buffered solution in 2 mL single use vials containing 50 mcg/mL, 100 mcg/mL, or 500 mcg/mL and a 5 mL multidose vial containing 200 mcg/mL. For

prolonged storage, store in fridge and protect from light. Do not freeze. For day-to-day use, both single use vials and multidose vials may be stored at room temperature for up to 2 weeks if protected from light. Once punctured, multidose vials should be refrigerated and used within 15 days.²⁸

For basic information on the current brand used at the BC Cancer Agency, see [Chemotherapy Preparation and Stability Chart](#) in Appendix.

SOLUTION PREPARATION AND COMPATIBILITY:

For basic information on the current brand used at the BC Cancer Agency, see [Chemotherapy Preparation and Stability Chart](#) in Appendix.

Additional information:

Reconstitute octreotide LAR powder: Allow octreotide LAR and vehicle vials to warm at room temperature for 30-60 minutes.⁸ Suspend powder with 2 mL of vehicle immediately before injection. Each kit contains a reserve vehicle ampoule. Without disturbing the powder, gently inject the vehicle into the vial by running injecting down the inside wall of the vial. Withdraw any excess air from the vial. Do not disturb the vial until the vehicle has wetted the powder. Once complete wetting has occurred (about 2-5 minutes), the vial should be moderately swirled until a uniform suspension is achieved. Do not shake the vial vigorously. Slowly withdraw the entire vial contents into the syringe. Immediately change the needle (supplied). Gently invert the syringe as needed to maintain a uniform suspension.⁴

Reconstituted octreotide LAR suspension for injection: should be injected immediately after reconstitution. Reconstituted octreotide LAR suspension must never be given IV.⁴

Compatibility: consult detailed reference

PARENTERAL ADMINISTRATION:

BCCA administration guideline noted in **bold, italics**

Subcutaneous	<i>in the smallest volume that will deliver the dose</i> <ul style="list-style-type: none"> • Rotate injection sites.²⁹ • Local discomfort may be reduced by allowing the solution to reach room temperature before injection and by injecting slowly. Do not use heat to bring solution rapidly to room temperature.⁴
<i>Intramuscular (for octreotide LAR)</i>	<i>by deep intragluteal injection</i> <ul style="list-style-type: none"> • Alternate between left and right gluteal muscles. • If a blood vessel is penetrated, select another injection site. • Do not use heat to bring solution rapidly to room temperature.⁴ • May use quadriceps for self-administration.³⁰
Direct intravenous <i>Octreotide LAR must never be given IV.⁴</i>	IV over 15 seconds - 3 min ^{29,31} <ul style="list-style-type: none"> • for <i>emergency</i> situations only⁸
Intermittent infusion <i>Octreotide LAR must never be given IV.⁴</i>	in 50 mL NS over 15-30 min <ul style="list-style-type: none"> • infusion rate must be controlled by an automated infusion control device.³¹
Continuous infusion <i>Octreotide LAR must never be given IV.⁴</i>	infuse at 25-50 mcg/h ³¹
Intraperitoneal	no information found

BCCA administration guideline noted in **bold, italics**

Intrapleural	no information found
Intrathecal	investigational, 5-10 mcg/h for severe intractable nonmalignant pain ³²
Intra-arterial	no information found
Intravesical	no information found

DOSAGE GUIDELINES:

Refer to protocol by which patient is being treated. Numerous dosing schedules exist and depend on disease, response and concomitant therapy.

Adults:BCCA usual dose noted in **bold, italics**

	Cycle Length:	
<i>Subcutaneous:</i>	Daily ⁴ :	start at 50 mcg SC once or twice daily; titrate dose for maintenance based on response (eg, 150 mcg [range 50-2000 mcg ²⁰] SC three times daily) <ul style="list-style-type: none"> starting dose may be higher depending on severity of symptoms acromegaly maximum dose: 1500 mcg per day⁴
	PRN:	100 mcg SC for 2 doses, 15 min and 6 h after chemotherapy ³³
<i>Intramuscular:</i>	4 weeks⁴:	<i>octreotide LAR: 20 mg</i> (range 10-40 mg) <i>IM for one dose on day 1</i> <ul style="list-style-type: none"> can be started the day after the last dose of octreotide SC. carcinoid tumours and VIPomas: Continue octreotide SC for at least two weeks in the same dose as before the switch. Some patients may require 3-4 weeks of such therapy. 10 mg starting dose not recommended as therapeutic levels reached more rapidly with a 20 mg dose For exacerbation of symptoms, give octreotide SC for a few days at the same dose as prior to switch to octreotide LAR. When symptoms are controlled, octreotide SC can be discontinued.
<i>Intravenous:</i>	Stat:	50 mcg IV, may repeat in 15 seconds ³⁴ <i>Octreotide LAR must never be given IV⁴</i>
<i>Adequate trial:</i>	acromegaly: 3 months ⁴ carcinoid tumours and VIPomas: octreotide SC: at least 2 weeks, then switch "responders" to octreotide LAR ⁴	
<i>Dosage in myelosuppression:</i>	no adjustment required	
<i>Dosage in renal failure:</i>	adjust dose for severe renal failure requiring dialysis, no details found ⁴	

<i>Dosage in hepatic failure:</i>	in patients with cirrhosis, the half-life of the drug may increase and adjustment of the maintenance dose may be necessary, no details found ⁴
<i>Dosage in dialysis:</i>	adjust dose for severe renal failure requiring dialysis, no details found ⁴
<u>Children:</u>	no information found

REFERENCES:

1. Novartis Medical Information. Personal communication. 28 March 2001.
2. Health Canada Therapeutic Products Programme. Patent register. Available at: <http://www.hc-sc.gc.ca/hpb-dgps/therapeut/htmleng/patents.html>; 16 February 2001.
3. Arnold R, Simon B, Wied M. Treatment of neuroendocrine GEP tumours with somatostatin analogues: a review. *Digestion* 2000;62(Suppl 1):84-91; Department of Internal Medicine, Philipps University, Marburg, Germany. arnoldr@mail.uni-marburg.de.
4. Novartis Pharmaceuticals Canada Inc. SANDOSTATIN® Product Monograph. Dorval, Quebec; 9 January 2001.
5. Briggs GG, Freeman RK, Yaffe SJ. *Drugs in pregnancy and lactation: A reference guide to fetal and neonatal risk*. 5th ed. Baltimore: Williams & Wilkins; 1998.
6. Pandha HS, Waxman J. Octreotide in malignant intestinal obstruction. *Anti-Cancer Drugs* 1996;7(Suppl 1):5-10; Department of Clinical Oncology, Hammersmith Hospital, London, UK.
7. Dorr RT, Von Hoff DD, editors. *Cancer chemotherapy handbook*. Norwalk: Appleton & Lange; 1994. p. 753.
8. Octreotide. USP DI. Volume 1. Drug information for the health care professional. 20th ed. Englewood, Colorado: Micromedex, Inc.; 2000.
9. Gillis JC, Noble S, Goa KL. Octreotide long-acting release (LAR). A review of its pharmacological properties and therapeutic use in the management of acromegaly. *Drugs* 1997;53(4):681-99; Adis International Limited, Auckland, New Zealand.
10. Lamberts SW, Uitterlinden P, Verschoor L, et al. Long-term treatment of acromegaly with the somatostatin analogue SMS 201-995. *New England Journal of Medicine* 1985;313(25):1576-80.
11. Davies PH, Stewart SE, Lancranjan L, et al. Long-term therapy with long-acting octreotide (Sandostatin-LAR) for the management of acromegaly [published erratum appears in *Clin Endocrinol (Oxf)* 1998 May;48(5):673]. *Clinical Endocrinology* 1998;48(3):311-6; University of Birmingham Department of Medicine, Queen Elizabeth Hospital, Edgbaston, UK.
12. Lancranjan I, Bruns C, Grass P, et al. Sandostatin LAR: a promising therapeutic tool in the management of acromegalic patients. *Metabolism: Clinical & Experimental* 1996;45(8 Suppl 1):67-71; Department of Oncology, Sandoz Pharma Ltd, Basel, Switzerland.
13. Ezzat S, Snyder PJ, Young WF, et al. Octreotide treatment of acromegaly. A randomized, multicenter study. *Annals of Internal Medicine* 1992;117(9):711-8; Wellesley Hospital, Toronto, Ontario, Canada.
14. Wasserman E, Hidalgo M, Hornedo J, et al. Octreotide (SMS 201-995) for hematopoietic support-dependent high-dose chemotherapy (HSD-HDC)-related diarrhoea: dose finding study and evaluation of efficacy. *Bone Marrow Transplantation* 1997;20(9):711-4; Division of Medical Oncology, Hospital Universitario 12 de Octubre, Madrid, Spain.
15. Wadler S, Benson AB, 3rd, Engelking C, et al. Recommended guidelines for the treatment of chemotherapy-induced diarrhea. *Journal of Clinical Oncology* 1998;16(9):3169-78; Montefiore Medical Center, Bronx, NY 10467, USA. wadler@jimmy.harvard.edu.
16. Saltz L, Trochanowski B, Buckley M, et al. Octreotide as an antineoplastic agent in the treatment of functional and nonfunctional neuroendocrine tumors. *Cancer* 1993;72(1):244-8; Department of Medicine, Memorial Sloan-Kettering Cancer Center, New York, NY 10021.
17. Rubin J, Ajani J, Schirmer W, et al. Octreotide acetate long-acting formulation versus open-label subcutaneous octreotide acetate in malignant carcinoid syndrome. *Journal of Clinical Oncology* 1999;17(2):600-6; Mayo Clinic, Rochester, MN 55905, USA.
18. di Bartolomeo M, Bajetta E, Buzzoni R, et al. Clinical efficacy of octreotide in the treatment of metastatic neuroendocrine tumors. A study by the Italian Trials in Medical Oncology Group. *Cancer* 1996;77(2):402-8; Istituto Nazionale per lo Studio e la Cura dei Tumori, Milan, Italy.
19. Kvols LK, Buck M, Moertel CG, et al. Treatment of metastatic islet cell carcinoma with a somatostatin analogue (SMS 201-995). *Annals of Internal Medicine* 1987;107(2):162-8.
20. Sulkowski U, Buchler M, Pederzoli P, et al. A phase II study of high-dose octreotide in patients with unresectable pancreatic carcinoma. *European Journal of Cancer* 1999;35(13):1805-8; City Hospital Soest, Department of Surgery, Germany.
21. Palmieri G, Lastoria S, Colao A, et al. Successful treatment of a patient with a thymoma and pure red-cell aplasia with octreotide and prednisone [published erratum appears in *N Engl J Med* 1997 Apr 3;336(14):1039]. *New England Journal of Medicine* 1997;336(4):263-5; Department of Molecular and Clinical Oncology and Endocrinology, School of Medicine, Federico II University, Naples, Italy.
22. Palmieri G, Lastoria S, Montella L, et al. Role of somatostatin analogue-based therapy in unresponsive malignant thymomas. *Annals of Medicine* 1999;31(Suppl 2):80-5.
23. Novartis Pharmaceuticals Canada Inc. SANDOSTATIN® product monograph. Dorval, Quebec; 3 September 2009.
24. Basow DS editor. *Octreotide*. UpToDate 19.2 ed. Waltham, Massachusetts: UpToDate®; accessed 11 August 2011.

25. Sargent AI, Overton CC, Kuwik RJ, et al. Octreotide-induced hyperkalemia [see comments]. *Pharmacotherapy* 1994;14(4):497-501; Department of Pharmacy, Mercy Hospital of Pittsburgh, PA 15219.
26. Lamberts SW, van der Lely AJ, de Herder WW, et al. Octreotide. *New England Journal of Medicine* 1996;334(4):246-54; Department of Medicine, Erasmus University, Rotterdam, The Netherlands.
27. Novopharm Limited. Octreotide injection® product monograph. Scarborough, Ontario; 16 June 2010.
28. Omega Laboratories Ltd. Octreotide Acetate Omega® product monograph. Montreal, Quebec; 23 July 2010.
29. Trissel L. Handbook on injectable drugs. 11th ed. : American Society of Health-System Pharmacists; 2000. p. 979-81.
30. BC Cancer Agency Gastrointestinal Tumour Group. (GIOCTLAR) BCCA Protocol Summary for Symptomatic Management of Functional Carcinoid and Neuroendocrine Tumors of the GI Tract using Octreotide (SANDOSTATIN LAR®) Vancouver, British Columbia: BC Cancer Agency; 01 July 1999.
31. Vancouver Hospital and Health Sciences Centre Pharmacy Department. Parenteral drug therapy manual. Vancouver, BC; 2000.
32. Paice JA, Penn RD, Kroin JS. Intrathecal octreotide for relief of intractable nonmalignant pain: 5-year experience with two cases. *Neurosurgery* 1996;38(1):203-7.
33. Cascinu S, Fedeli A, Fedeli SL, et al. Control of chemotherapy-induced diarrhea with octreotide. A randomized trial with placebo in patients receiving cisplatin. *Oncology* 1994;51(1):70-3; Servizio di Oncologia, Ospedali Riuniti, Pesaro, Italy.
34. Kvols LK, Martin JK, Marsh HM, et al. Rapid reversal of carcinoid crisis with a somatostatin analogue [letter]. *New England Journal of Medicine* 1985;313(19):1229-30.